



Post-traumatic stress disorder following childbirth: a study of prevalence and related factors in iranian women

Prevalence of PTSD following childbirth

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Abstract

Aim: Women who experience severe distress during the process of childbirth might develop Post-Traumatic Stress Disorder (PTSD) with feeling the danger of death or severe trauma for the mother or the infant. Considering the changes in the diagnostic criteria of traumatic birth from the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV) to DSM-V and the adverse consequences of PTSD following childbirth, the present study was conducted. **Material and Method:** This cross-sectional study was conducted from February to July 2017 on 375 postpartum women who experienced traumatic birth based on the criteria of DSM-V [A] and referred to the health centers of Arak, Iran, between 42-60 days postpartum. Data gathering tools were demographic and maternal-neonatal characteristics questionnaire, the PTSD Symptom Scale-Interview for DSM-5 (PSS-I-5), Mackey Childbirth Satisfaction Rating Scale and Winefield & Tiggmann Social support questionnaire. Chi-square test, trend Chi test, independent t-test and multivariate logistic regression test, were used for data analysis. **Results:** The prevalence of PTSD following childbirth was 26.7%. Logistic regression results found that childbirth satisfaction (OR=0.97, 95%CI: 0.96-0.98, P<0.001), and support during and after delivery (OR=0.62, 95%CI: 0.26-0.91, P=0.004) significantly decreased risk of PTSD following childbirth and infant's restlessness (OR=3.04, 95%CI: 1.39-6.64, P=0.004) increased its risk. **Discussion:** Considering the high prevalence of PTSD following childbirth, designing appropriate interventions for improving labor experiences and enhancing support during and after delivery to prevent PTSD seems necessary.

Keywords

Post-Traumatic Stress Disorder; Traumatic Birth; Prevalence

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Introduction

Usually, traumatic birth is considered equal to physical injury, while delivery could cause mental trauma. Women who experience severe distress during the process of delivery, in worse case scenarios, might develop Post-Traumatic Stress Disorder (PTSD) following childbirth which includes delivery experience leading to the threat for the life of the mother or the infant which is associated with near-death experience or severe trauma for the mother or the infant. In the fifth edition of The Diagnostic and Statistical Manual of Mental Disorders (DSM-V), PTSD is classified among stress-related traumas which has four main symptoms of reliving the event in the mind (disturbing thoughts, nightmare and feeling recurrence of the event), avoiding memories, negative thoughts and emotions related to the event, developing negative changes in the mood, cognition, arousal, and reactions such as restlessness, anger, disrupted focus and sleep. Some of the changes in the PTSD criteria from DSM-IV to DSM-V are elimination of three symptoms from Criterion A: intense fear, helplessness, and horror and dividing the symptom cluster of the avoidance and emotional numbing into two separate clusters of avoiding negative memories, thoughts and emotions related to the event and negative changes in the mood and cognition and also adding three symptoms of persistent negative beliefs and expectations about oneself or the world, blaming one's self or others as the cause of the trauma and persistent negative emotional state, and self-destructive or reckless behavior [1].

The prevalence of PTSD following childbirth, according to previous editions of DSM, was 1-13% in European countries [2, 3], 8-9% in Canada and the United States [4, 5] and 17-39% in different cities of Iran [6, 7]. The prevalence of PTSD has also been reported up to 33% among risky populations such as emergency cesarean section [8].

According to previous literature, variables such as history of abortion or infertility, unwanted pregnancy, complicated pregnancy and hospitalization due to pregnancy complications, experiencing trauma in previous delivery, nulliparity, short interval between pregnancies, fear of epidural anesthesia or the delivery, emergency caesarean section, induced labor, severe pain and poor skills for coping with pain, women's unattended expectations during labor and delivery, instrumental vaginal delivery, severe maternal complications following childbirth, dissatisfaction with child's gender and breastfeeding problems, and neonatal complications such as abnormalities, premature birth, low birth weight, hospitalization, stillbirth and infant's death are factors related to PTSD following childbirth [9, 10].

Some of the outcomes of PTSD following childbirth are changes in the mood and behaviors, disruption in women's social function, negative effects on relationship with the spouse and poor parental compatibility [11]. These women are more prone to postpartum depression [12].

Considering the changes in the diagnostic criteria of traumatic delivery from DSM-IV to DSM-V and also considering the adverse outcomes of PTSD following childbirth, the present study was designed based on the prevalence of PTSD following childbirth and its related factors, so that appropriate and in-time interventions by health care providers especially midwives would be developed to improve the mental health of postpartum women.

Material and Method

This cross-sectional study was conducted to evaluate the prevalence of PTSD following childbirth based on the DSM-V criteria and its related factors from February to July 2017. The study was approved by the ethics committee of the Tabriz University of Medical Sciences (IR.TBZMED.REC.1395.405) in 2016.

The study population for this study included all the delivered women who have experienced traumatic birth and referred to the health centers of Arak, Iran, between 42-60 days postpartum to receive routine postpartum cares; they were evaluated for development of PTSD following childbirth at the centers. Arak is the capital of Markazi Province located in central Iran with a population of 526,182. The sample size for the present study was calculated using the formula $n = \frac{z^2 \cdot p \cdot d}{d^2}$ where z was the 95% confidence interval, $d = 0.05$ and $p = 0.39$; based on a study by Vijeh et al. [7] the maximum sample size was estimated to be 375. Sampling was conducted in two stages; At first, from all the 46 health centers of Arak, about half, which was 23, was randomly selected using the website www.random.org and then after referring to these centers, the samples were selected using convenience sampling method. The inclusion criteria were being a delivered woman and having experienced traumatic birth based on the criteria A from DSM-V. For evaluating the experience of traumatic birth, mothers were asked the questions of "was your own, or your infant's life threatened during labor or delivery?" and "were you afraid of the possibility of severe injury to yourself or your infant during labor or delivery?" [1]. In case of a positive answer to at least one of the mentioned questions, the birth was considered as traumatic.

Women with illegitimate pregnancy, stillbirth cases, abnormalities or fetal death, history of depression, anxiety or other previously diagnosed psychological disorders, history of systemic and chronic disease or emerging disorders during pregnancy, history of tragic incident, such as death of first degree relatives, during the past 6 months, and also history of abortion, instrumental delivery, stillbirth and neonatal death during previous pregnancy and delivery were excluded from the study.

As for ethical consideration, the aim of the study was explained to the participants. Both participation and withdrawal from the study were completely voluntary. The confidentiality of the participants' personal information was guaranteed. Written informed consent was obtained from the postpartum women who were willing to participate in the study. So, 375 women who have experienced traumatic birth, completed demographic and maternal-neonatal characteristics questionnaire, Mackey Childbirth Satisfaction Rating Scale (MCSRS), Winefield & Tiggmann Social support questionnaire and they were asked to complete the PTSD Symptom Scale-Interview for DSM-5 (PSS-I-5), between 42 to 60 days postpartum. To prevent exhaustion of the participants, some of the questions such as infant's weight, gestational age and ... ??? were answered by the researcher using the health profile of the participants.

PSS-I-5 has been designed based on the DSM-5 criteria and contains 24 questions; 5 questions are about the symptoms of intrusion, avoidance, mood and cognition, arousal and reactivity, distress, and interference; 2 about avoidance; 7 about mood and cognition; 6 about arousal and reactivity and 4 about distress and interference. PTSD diagnosis is determined by count-

ing the number of symptoms endorsed per symptom cluster. One intrusion symptom, one avoidance symptom, three cognition and mood symptoms, and three arousal and reactivity symptoms are needed to meet diagnostic criteria [13]. Cronbach's α and the test-retest results for the Persian version of the questionnaire were more than 0.70 [14].

MCSRS contains 40 questions which evaluate six dimensions of satisfaction with one's performance, midwife's performance, companion's performance, physician's performance, neonate's status and total satisfaction with the delivery. From them, 34 questions evaluate six dimensions of satisfaction with one's performance, midwife's performance, companion's performance, physician's performance, neonate's status and total satisfaction with the delivery. The questions would be answered with a 5-point Likert scale from completely dissatisfied =1 to completely satisfied =5. The scores would vary from 34 to 170. The last six questions of the questionnaires are open-answered for evaluating the experience from the delivery [15]. In the validation study of the Persian version of the questionnaire by Moodi et al. [16], the Cronbach's α was 0.78, and its stability using ICC was 0.98.

Winefield & Tiggmann, Social Support Questionnaire, has six questions each scored 1 or 0 based on the positive or negative answer; its total score varies from 0 to 6. The reliability and internal consistency of this questionnaire have been calculated 0.80 and 0.95 respectively [17].

After completion of the questionnaires, data were analyzed using SPSS software version 24. For analyzing the data descriptive and analytical statistics including frequency distribution, chi-square, trend chi, independent t-test and multivariate logistic regression (inter model) were used. All women who had PTSD following childbirth were referred to Psychiatry for treatment.

Table 1. Comparison between both groups of PTSD and non-PTSD regarding their demographic characteristics

Demographic characteristics	PTSD Symptoms		P value
	Yes (n = 100)	No(n = 275)	
Age*	28.49 (5.05)	28.25 (5.31)	0.64#
Husband's age*	33.01 (5.50)	33.17 (5.29)	0.88#
Job			0.36†
Housewife	96 (25.6)	258 (68.8)	
Employed	3 (0.8)	17 (4.5)	
Husband's job			0.31†
Unemployed	3 (0.78)	2 (0.52)	
Employee	15 (4)	57 (15.2)	
Laborer	36 (9.6)	95 (25.2)	
Freelancer	45 (12.02)	120 (31.98)	
Retired	1 (0.25)	1 (0.25)	
Educational level			0.94‡
Elementary/guidance school	9 (2.4)	62 (16.5)	
High school/diploma	74 (19.7)	146 (38.8)	
Academic	16 (4.2)	66 (17.6)	
Husband's educational level			0.032‡
Illiterate	3 (0.8)	9 (2.4)	
Under diploma	33 (8.8)	68 (18.2)	
Diploma	49 (13.2)	121 (32.3)	
Academic	15 (4.0)	75 (20.0)	
Income level			0.87‡
Insufficient	27 (7.2)	50 (13.3)	
Relatively sufficient	52 (13.9)	155 (41.5)	
Sufficient	19 (5.1)	67 (17.9)	

* Mean (SD) # Independent Sample T-test † Chi square ‡Trend Chi square

Results

The prevalence of PTSD following childbirth was 26.7% (n = 100) in the present study. The mean age of the participants was 28.43 (5.12) years. Demographic and maternal-neonatal characteristics and the comparison between both groups of PTSD and non-PTSD are shown in tables 1 and 2.

In the present study, the mean (SD) of satisfaction with delivery in the groups of PTSD and non-PTSD were 100.02 (34.156) and 127.54 (25.550) respectively. In this study, 66 (17.8%) of women with PTSD and 91 (24.4%) of non- PTSD women reported good perceived social support during and after delivery. In two-variable comparison, results showed a significant relation between PTSD following childbirth and satisfaction with delivery ($p < 0.001$) and perceived support during and after delivery ($p < 0.001$).

After applying the variables in the multivariate logistic regression model and evaluating the mutual effects of these variables, satisfaction with delivery ($p < 0.001$), perceived support during and after delivery ($p = 0.004$) and neonate status ($p = 0.004$) showed a significant relation with PTSD following childbirth

Table 2. Comparison between both groups of PTSD and non-PTSD regarding their maternal-neonatal characteristics

Maternal-neonatal characteristics	PTSD Symptoms		P value
	Yes(n - 100)	No(n - 275)	
Number of deliveries			0.63*
First delivery	43 (11.5)	128 (34.1)	
Second delivery	34 (9.0)	94 (25.0)	
Third delivery or more	23 (11.4)	53 (8.7)	
The interval between the current pregnancy and the previous pregnancy#	2.51 (3.2)	3.37 (4.1)	0.002†
Type of delivery	49 (13.0)	174 (42.6)	0.06‡
Vaginal	24 (6.4)	46 (12.2)	
Repeated cesarean section	27 (7.2)	55 (14.6)	
Emergency cesarean section			0.07‡
Place of delivery	14 (3.7)	53 (14.2)	
Private hospitals	86 (23.0)	220 (58.9)	
Public and social security hospitals			0.054‡
Birth attendant	52 (13.8)	155 (41.3)	
Specialist or resident	48 (12.8)	120 (31.9)	
Midwife	42 (11.2)	89 (23.6)	0.16‡
Maternal complications during pregnancy, labor and after childbirth	66 (17.6)	210 (55.9)	0.04‡
Pregnancy status	34 (9.0)	65 (17.3)	0.65‡
Planned	45 (20.2)	156 (69.9)	
Unplanned	4 (1.8)	18 (8.1)	
Episiotomy			0.034‡
Yes	8 (2.1)	23 (6.1)	
No	40 (10.7)	78 (20.9)	
Type of analgesia	1 (0.2)	12 (3.2)	
General anesthesia (cesarean)	3 (0.8)	29 (7.8)	
Local anesthesia (cesarean)	48 (12.9)	130 (34.8)	
Physiologic childbirth	39.35 (1.2)	39.36 (1.7)	0.48†
Pharmacological pain management	3368 (528)	3534 (1575)	0.48†
No analgesia	9 (2.4)	15 (4)	0.44‡
Gestational age (weeks)#			0.031‡
Birth weight (grams)#	62 (16.5)	136 (36.2)	
Neonate's illness and hospitalization	38 (10.15)	139 (37.05)	<0.001‡
Infant's gender	45 (48)	42 (11.2)	
Girl	55 (14.6)	233 (62.1)	
Boy			0.48‡
Neonate status	90 (24)	250 (66.6)	
Restless with extreme crying	0 (0)	3 (0.8)	
Relaxed	10 (2.6)	22 (5.8)	
Neonate's nutrition			
Breast milk			
Baby formula			
Breast milk and formula			

*Mann-Whitney U test # Mean (SD) †Independent Sample T-Test ‡ Chi-Square

(Table 3); meaning that PTSD following childbirth would be decreased by increased satisfaction with delivery (OR=0.97, 95%CI 0.96-0.98) and increased perceived support during and after delivery (OR=0.62, 95%CI 0.26-0.91). The possibility of PTSD following childbirth would be increased among mothers with restless infants (OR=3.04, 95%CI =1.39-6.64).

Table 3. Related risk factors to PTSD following childbirth based on the logistic regression model

Variable	OR(95%CI) **	P value *
Satisfaction with delivery	0.97 (0.96-0.98)	< 0.001
Perceived support during and after delivery	0.62 (0.26-0.91)	0.004
Infant status (restless with extreme crying)	3.04 (1.39-6.64)	0.004
Husband's educational level (non-academic)	0.69 (0.27-1.74)	0.44
Interval between the current pregnancy and the previous pregnancy	0.90 (0.82-1.00)	0.05
Pregnancy status (unplanned)	1.19 (0.57-2.45)	0.63
Infant's gender (girl)	1.57 (0.88-2.79)	0.12
Analgesia (no analgesia)	0.49 (0.36-6.96)	0.60

*Multivariate Logistic Regression **Odd Ratio, 95% Confidence Interval

Discussion

In the present study, the prevalence of PTSD following childbirth was 26.7% which was in line with the previous Iranian studies (17.2%- 39%) [6,7]. But this prevalence is high compared to developed countries [2-5]. Probably, medicalization and more medical interventions during the labor and delivery and also impossibility of having a companion during labor and delivery, which might decrease satisfaction with delivery and perceived support during labor, could be the main reasons for the high prevalence of PTSD following childbirth in Iran. On the other hand, the ability and skill for coping with traumatic birth vary among different populations. Considering the high prevalence of PTSD following childbirth in Iran, it is recommended to consider screening program in the country.

In the present study, a significant relation was observed between satisfaction with delivery ($p < 0.001$), perceived support during and after delivery ($p = 0.004$) and infant status with PTSD following childbirth.

Similar to the present study, other studies also reported the significant relation between delivery experiences and PTSD following childbirth [18, 19]. In the study conducted by Dekel et al. [20], negative experience of delivery was considered as the most important predictor of PTSD following childbirth. In the study of Hollander et al. [19] emotional and practical support by the medical team during labor was associated with decreased possibility of PTSD following childbirth and according to Simpson et al. [21], low quality of the caregivers interactions during labor was reported as one of the most important risk factors for experiencing traumatic birth.

In general, social support has an important role in decreasing stress and other mental problems following childbirth [22]. Similar to the present study, in an Iranian study decreased social support after delivery was associated with PTSD [23]. But other studies have not reported any significant relationship between perceived social support after delivery and PTSD following childbirth [2, 24]. It could be due to different community structures.

In the present study, the possibility of PTSD following childbirth was increased up to three times more in mothers with restless

infants ($p = 0.004$). Other studies also supported the effect of infant's restlessness and crying and problem in taking care of the infant on developing PTSD following childbirth [6, 7]. Other studies have also reported a significant relationship between infant's crying and postpartum depression [22, 25].

This is the first prevalence study regarding the PTSD following childbirth based on DSM-V in Iran as a strong point of the present study. Considering the cross-sectional design of the present study and its limitation in which the exposure and outcome are simultaneously assessed, it is recommended to design prospective studies in the future to evaluate a temporal relationship between cause and effect. Also considering the high prevalence of PTSD following childbirth in Iran, designing appropriate interventions for improving delivery experiences and enhancing the provided support during and after delivery seems necessary to prevent the development of PTSD; it is also necessary to provide counseling interventions for women with PTSD following childbirth.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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